



Oracle Autonomous Database Update

Global Leaders 2020

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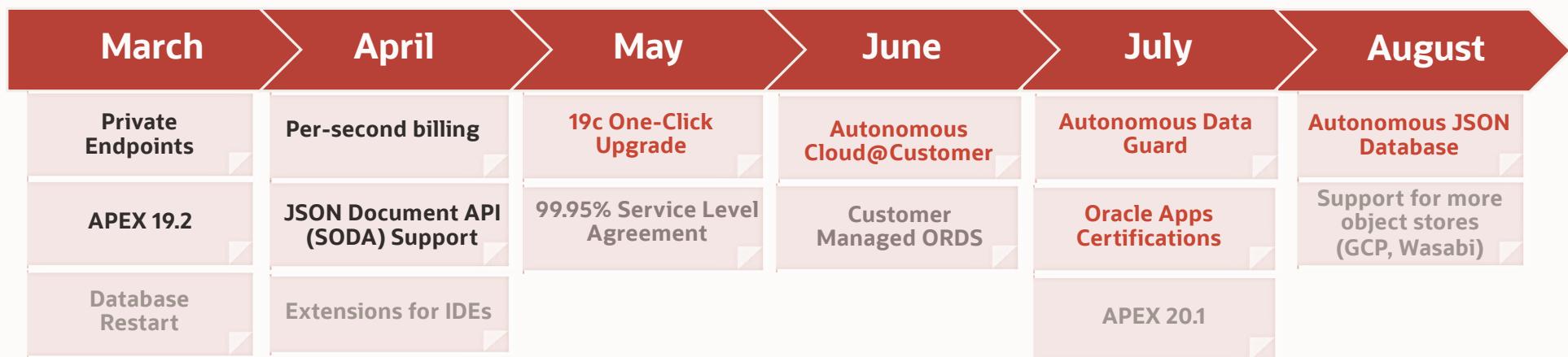


What's new with Oracle Autonomous Database?

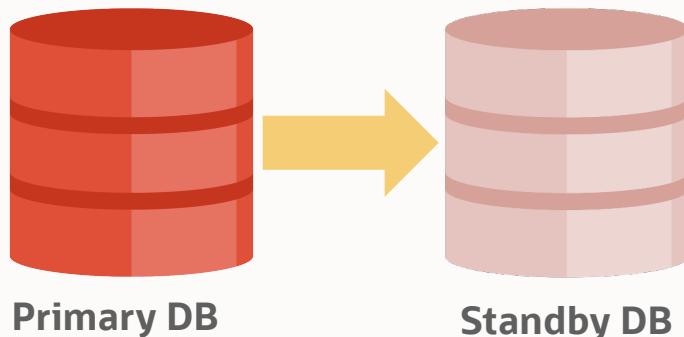


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Autonomous Database: Recent New Features



Autonomous Data Guard



- Fully-managed standby database
- Simple and transparent
 - Completely transparent to customer applications
 - Automatic failover for zero-data loss scenarios
 - User-initiated failover for other scenarios
- Initially in same region as primary database
 - In different availability domains when possible
 - Cross-region standby coming soon
- 99.995% availability

Autonomous JSON Database



Autonomous JSON Database

Provides the same benefits as NoSQL document stores

- New service for **JSON-centric** development
- Flexible and fast at scale
- **Native** JSON storage
- Simple **document APIs**
 - Language drivers, command-line, and REST
 - SQL not required

AJD

Autonomous JSON Database

More than a simple document store

- ✓ Autonomous
- ✓ Full SQL support
- ✓ ACID Transactions
- ✓ Advanced security
- ✓ APEX low-code development
- ✓ One-click instant expansion to ATP



CRUD Operations

Introducing **SODA** (Simple Oracle Document Access) and **SQLcl**

SODA APIs

- NoSQL-style APIs for
 - Java, JavaScript/Node.js, Python, REST, PL/SQL, C...
- Used to manage JSON data
 - create collections
 - store documents in collections
 - retrieve documents
 - query documents
- ***No need to know SQL!***

SQLcl

- Modern SQL Developer Command Line interface for Oracle database
- Provides
 - inline editing, statement completion, command recall...
 - **SODA commands**



MongoDB Compared to Oracle SODA

```
MongoClient mongoClient = new MongoClient();
DB database = mongoClient.getDB("procurement");
DBCollection coll =
database.getCollection("purchase_orders");

BasicDBObject po = new
BasicDBObject(JSON.parse(json1));

coll.insert(po);

DBObject query = new BasicDBObject("Requestor",
"Alexis Bull");

DBCursor cursor = coll.find(query);
DBObject doc = cursor.one();
```

```
OracleDatabase db = new
OracleRDBMSClient().getDatabase(jdbcConnection);

OracleCollection coll =
db.admin().createCollection("purchase_orders");

OracleDocument po = db.createDocumentFromString(json1);
coll.insert(po);

OracleDocument qbe =
db.createDocumentFromString("""{"Requestor":"Alexis
Bull"}""");

OracleCursor cursor = coll.find().filter(qbe).getCursor();
OracleDocument doc = cursor.next();
```



Autonomous JSON Database

Lower Cost than MongoDB

- Autonomous JSON Database Pricing:
- \$0.2688 OCPU per hour (\$240/month)
- \$0.1591 TB per hour (\$118.40/month)

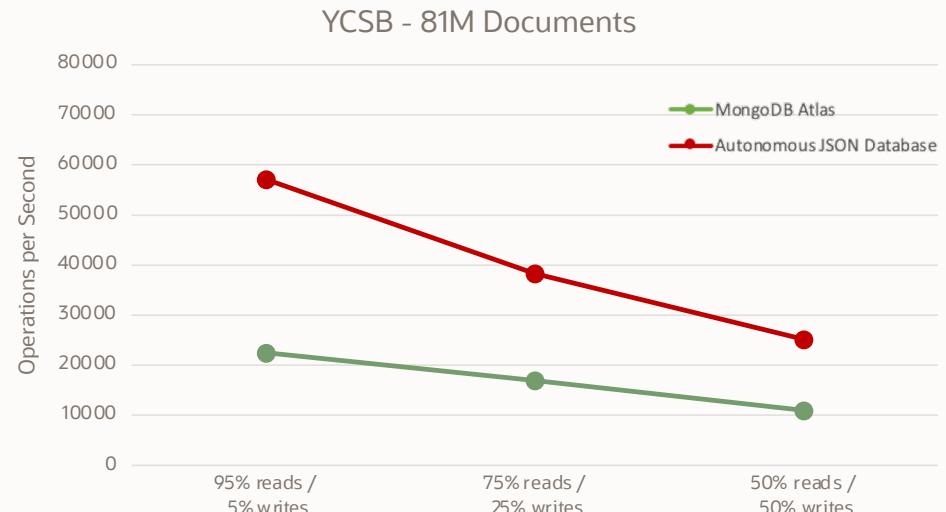
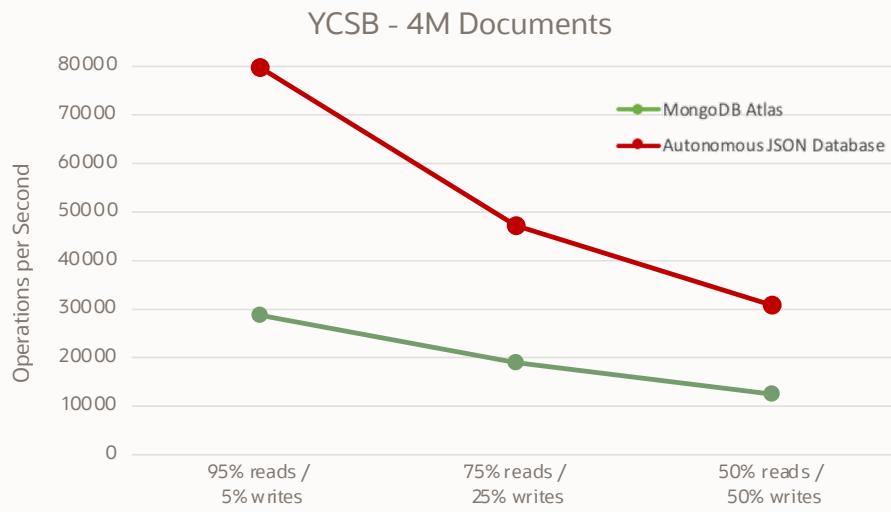
	Autonomous JSON DB	MongoDB Atlas
Configuration	8 OCPU 1 TB storage	M60 on AWS 16 vCPU (= 8 OCPU) 320 GB storage
Price (on-demand)	\$2.74 / hour	\$3.95 / hour

PLUS: Autonomous JSON Database is auto-scaling, not limited to fix shapes



Autonomous JSON Database

Faster than MongoDB



Autonomous JSON Database with 8 OCPUs compared to MongoDB Atlas on M60

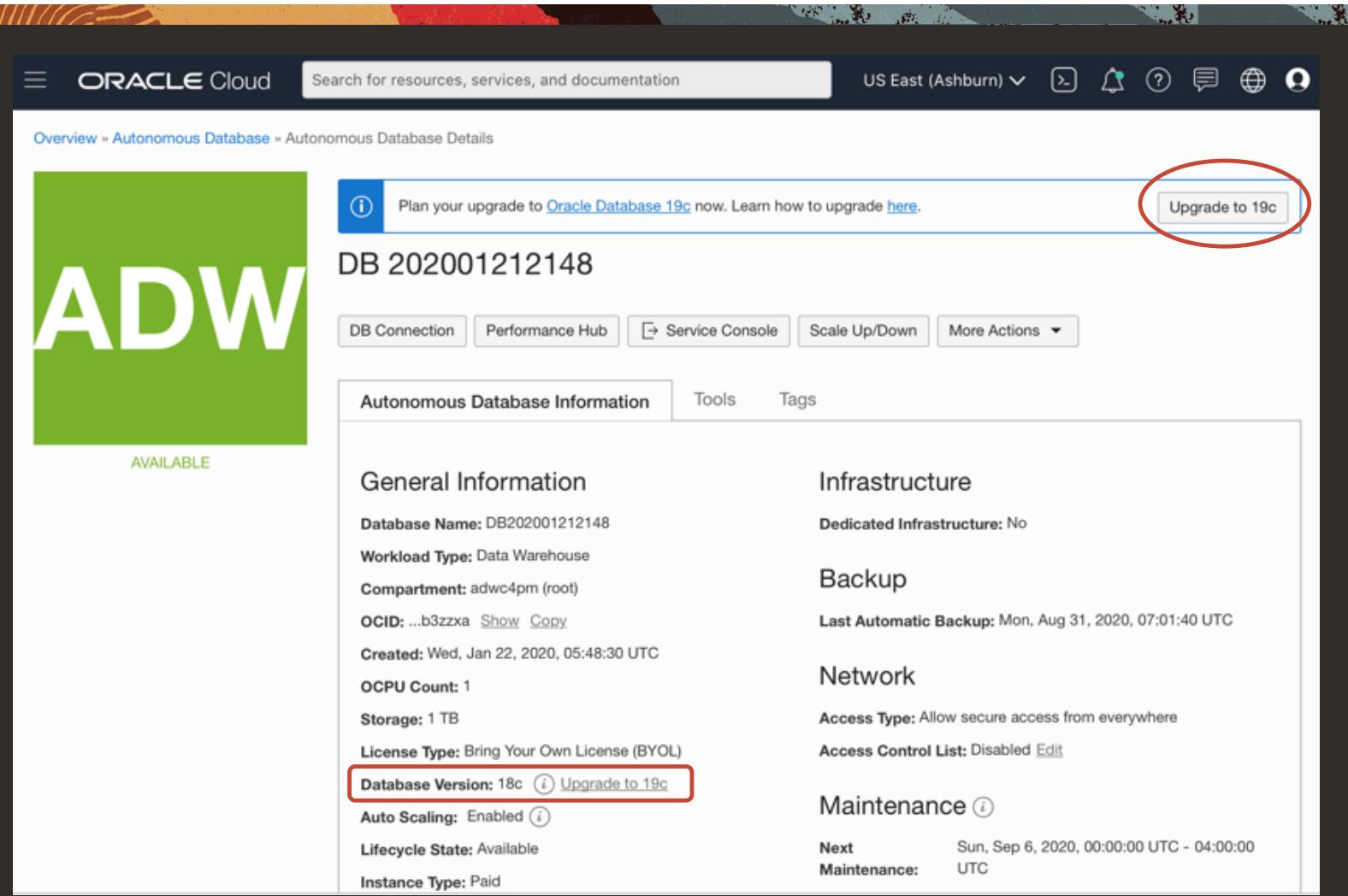
Industry-standard Yahoo Cloud Serving Benchmark (YCSB)

Source of MongoDB results: <https://www.mongodb.com/atlas-vs-amazon-documentdb/performance> as of 8/12/2020



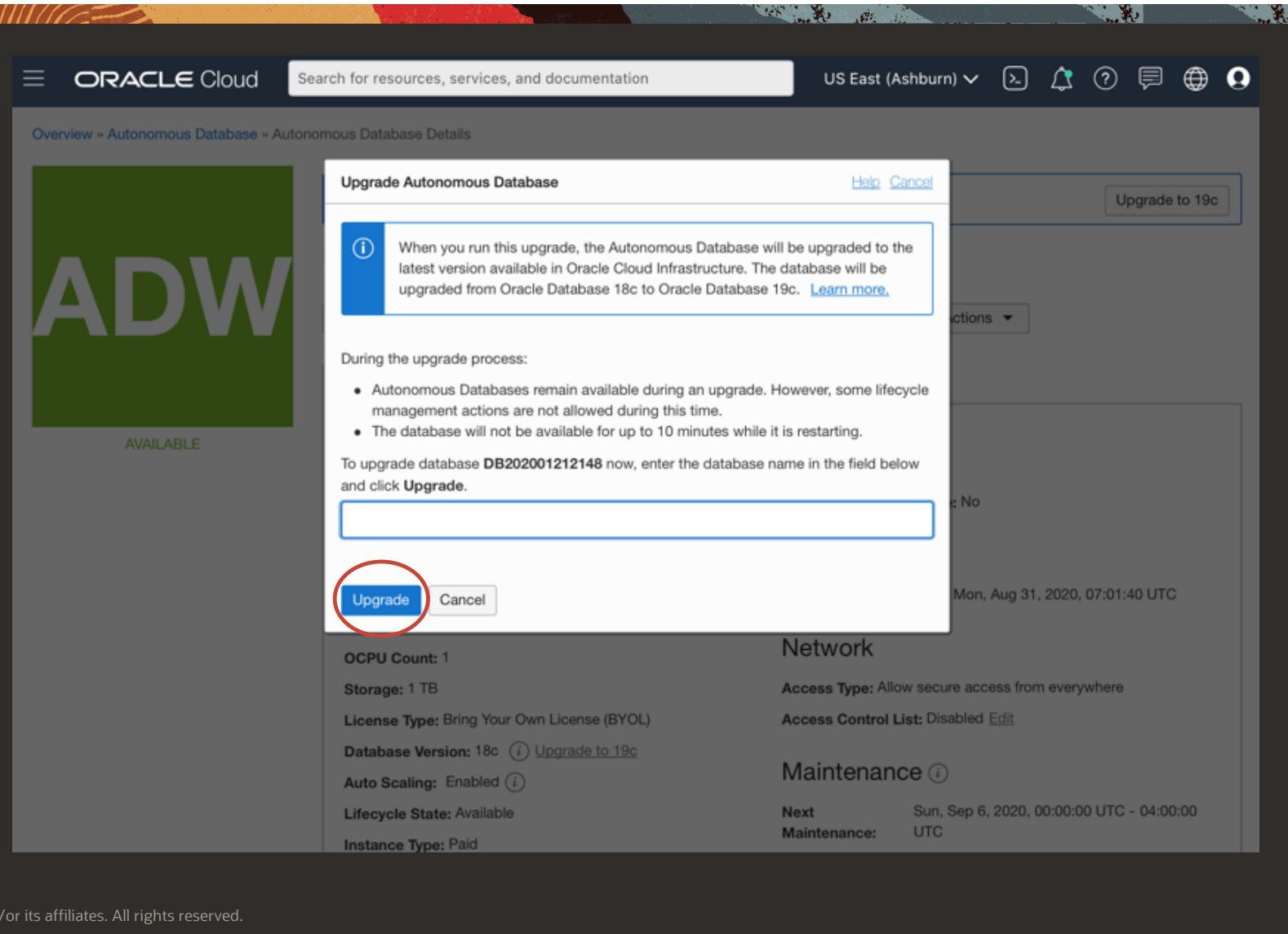
19c One-Click Upgrade on Oracle Autonomous Database

One Click Upgrade



The screenshot shows the Oracle Cloud interface for an Autonomous Database. At the top, there's a navigation bar with the Oracle Cloud logo, a search bar, and a location indicator 'US East (Ashburn)'. Below the navigation, the page title is 'Overview » Autonomous Database » Autonomous Database Details'. A large green box on the left displays 'ADW' in white, with 'AVAILABLE' text below it. In the center, there's a callout box with an info icon: 'Plan your upgrade to Oracle Database 19c now. Learn how to upgrade [here](#)'. To the right of this is a button labeled 'Upgrade to 19c' with a red oval highlighting it. Below the callout, the database name 'DB 202001212148' is displayed. A row of buttons includes 'DB Connection', 'Performance Hub', 'Service Console', 'Scale Up/Down', and 'More Actions'. A tab bar below shows 'Autonomous Database Information' is selected, along with 'Tools' and 'Tags'. The main content area is divided into two columns: 'General Information' and 'Infrastructure'. Under 'General Information', details include: Database Name: DB202001212148, Workload Type: Data Warehouse, Compartment: adwc4pm (root), OCID: ...b3zzxa, Created: Wed, Jan 22, 2020, 05:48:30 UTC, OCPU Count: 1, Storage: 1 TB, License Type: Bring Your Own License (BYOL), Database Version: 18c, Auto Scaling: Enabled, Lifecycle State: Available, and Instance Type: Paid. Under 'Infrastructure', details include: Dedicated Infrastructure: No, Backup: Last Automatic Backup: Mon, Aug 31, 2020, 07:01:40 UTC, Network: Access Type: Allow secure access from everywhere, Access Control List: Disabled, Edit, and Maintenance: Next: Sun, Sep 6, 2020, 00:00:00 UTC - 04:00:00, Maintenance: UTC.

One Click Upgrade



Oracle Cloud Search for resources, services, and documentation US East (Ashburn) ▾ [Upgrade to 19c](#)

Overview » Autonomous Database » Autonomous Database Details

ADW

AVAILABLE

Upgrade Autonomous Database

When you run this upgrade, the Autonomous Database will be upgraded to the latest version available in Oracle Cloud Infrastructure. The database will be upgraded from Oracle Database 18c to Oracle Database 19c. [Learn more.](#)

During the upgrade process:

- Autonomous Databases remain available during an upgrade. However, some lifecycle management actions are not allowed during this time.
- The database will not be available for up to 10 minutes while it is restarting.

To upgrade database **DB202001212148** now, enter the database name in the field below and click **Upgrade**.

Upgrade Cancel

OCPU Count: 1

Storage: 1 TB

License Type: Bring Your Own License (BYOL)

Database Version: 18c [\(i\) Upgrade to 19c](#)

Auto Scaling: Enabled [\(i\)](#)

Lifecycle State: Available

Instance Type: Paid

Network

Access Type: Allow secure access from everywhere

Access Control List: Disabled [Edit](#)

Maintenance [\(i\)](#)

Next Maintenance: Sun, Sep 6, 2020, 00:00:00 UTC - 04:00:00 UTC

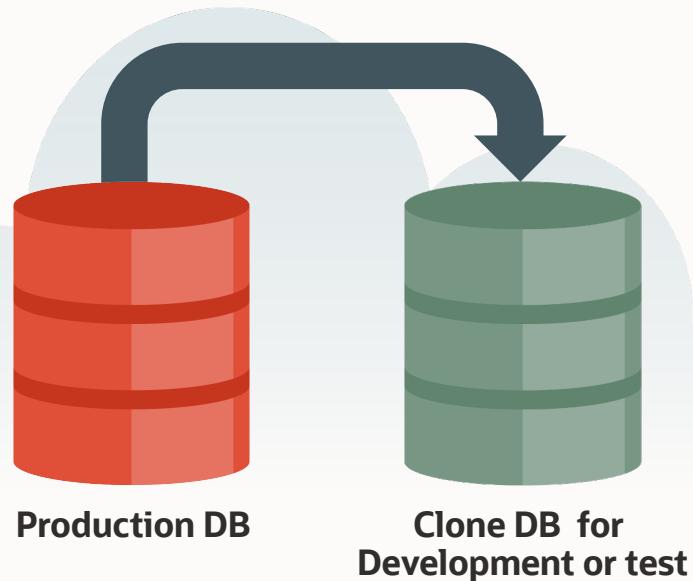
Mon, Aug 31, 2020, 07:01:40 UTC

How to use the most popular “lifecycle” feature of Oracle Autonomous Database to Upgrade



Cloning – The Most Popular Feature in ADB

Quickly provision a point-in-time copy



- Cloning creates a point-in-time copy of
 - An Autonomous Database
 - A backup of an Autonomous Database
- Two types of clone can be created:
 - A full database clone
 - A metadata clone (Schema but no data)
- Easy and fast as user only decides:
 - Compartment for the clone
 - Name of the clone
 - CPU and storage
 - New ADMIN password

Real-Customer Example of Cloning in Action

Using Cloning to Prepare for Database Upgrade

July 29th

Production
DB 5TB

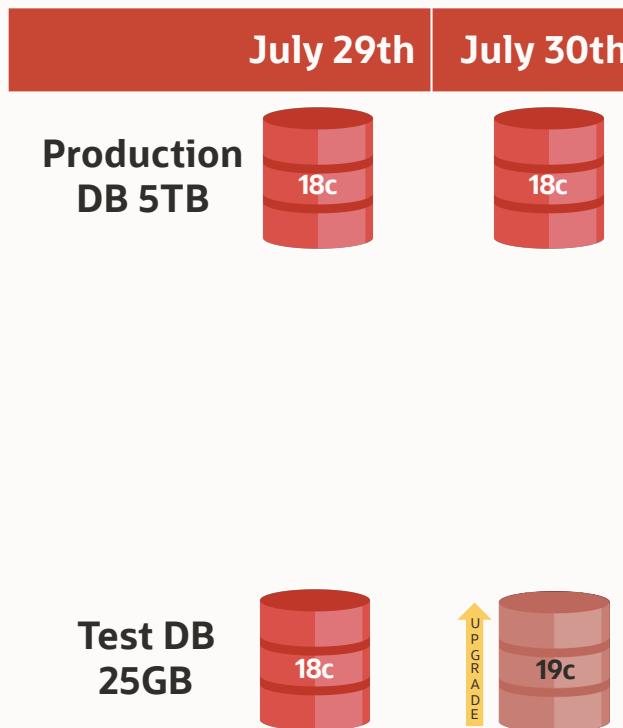


Test DB
25GB



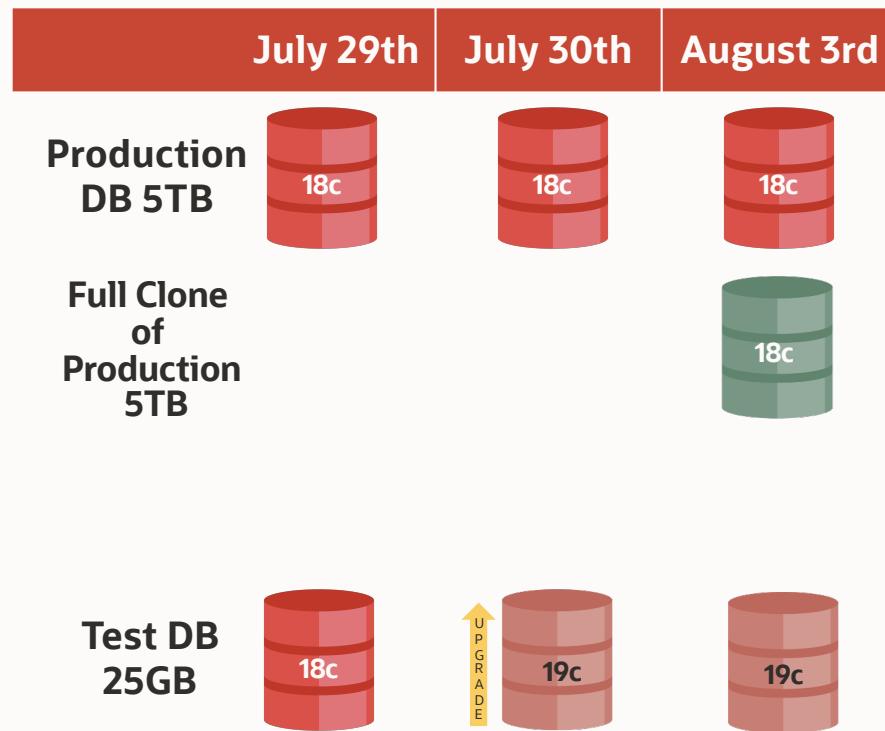
Real-Customer Example of Cloning in Action

Using Cloning to Prepare for Database Upgrade



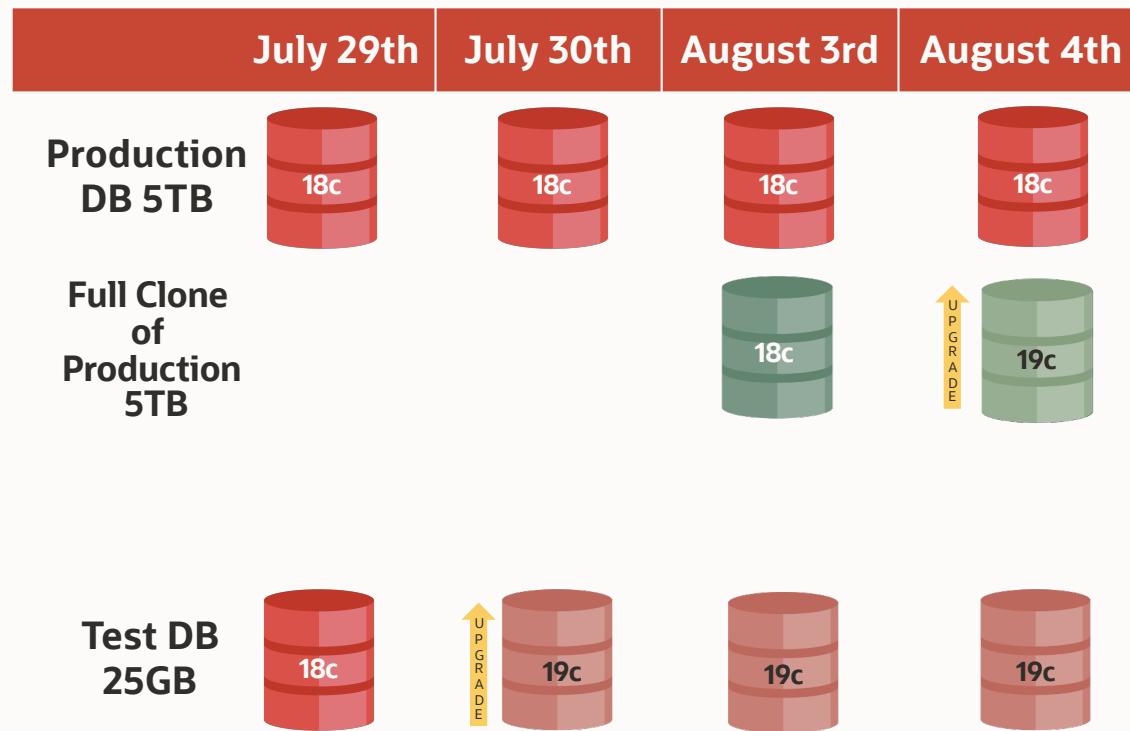
Real-Customer Example of Cloning in Action

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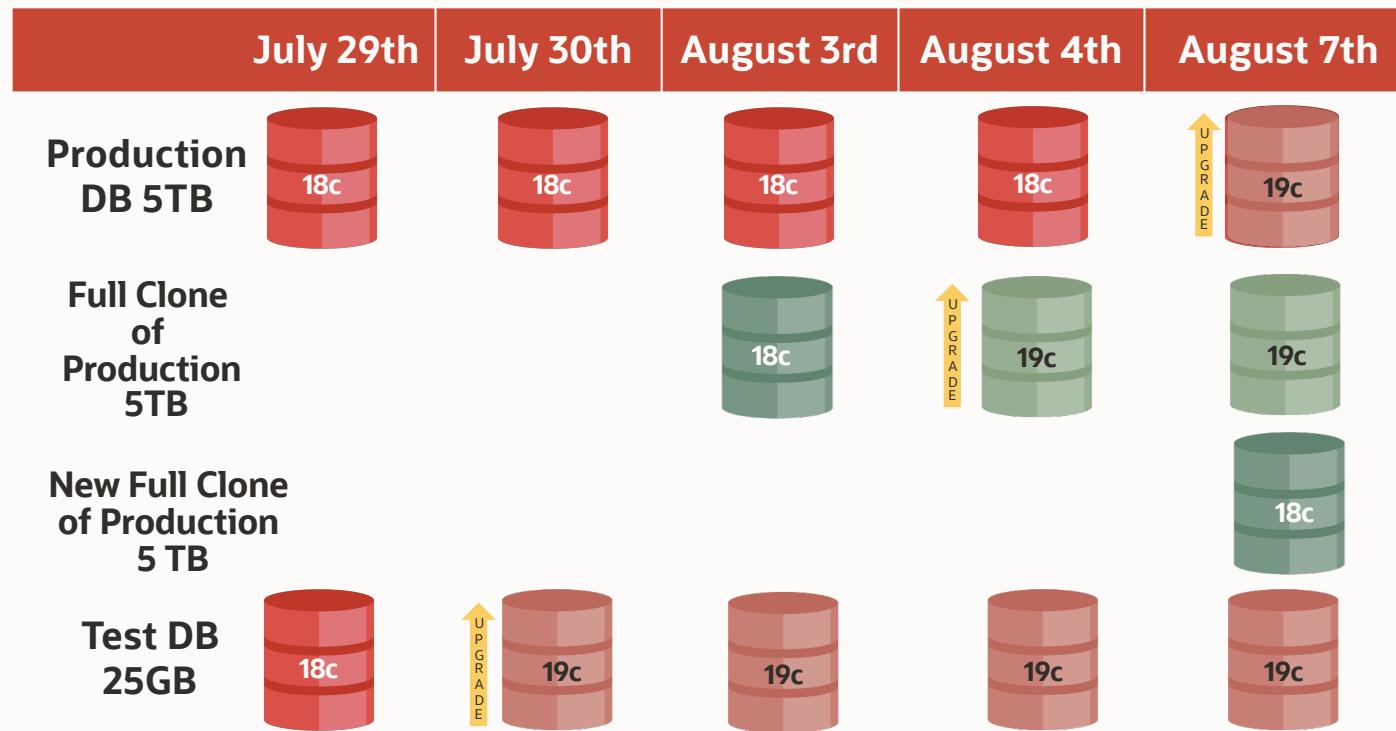
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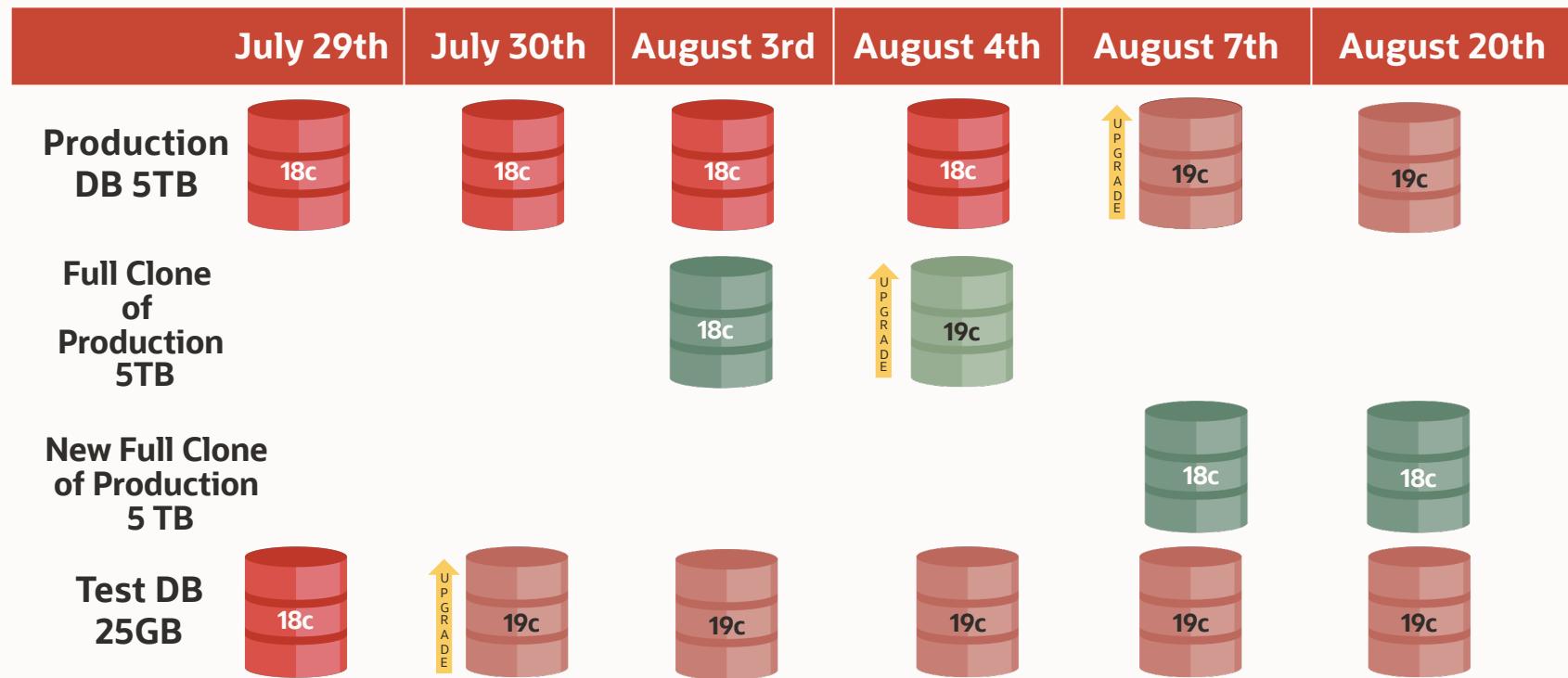
Real-Customer Example of Cloning in Action

Using Cloning to Prepare for Database Upgrade



Real-Customer Example of Cloning in Action

Using Cloning to Prepare for Database Upgrade



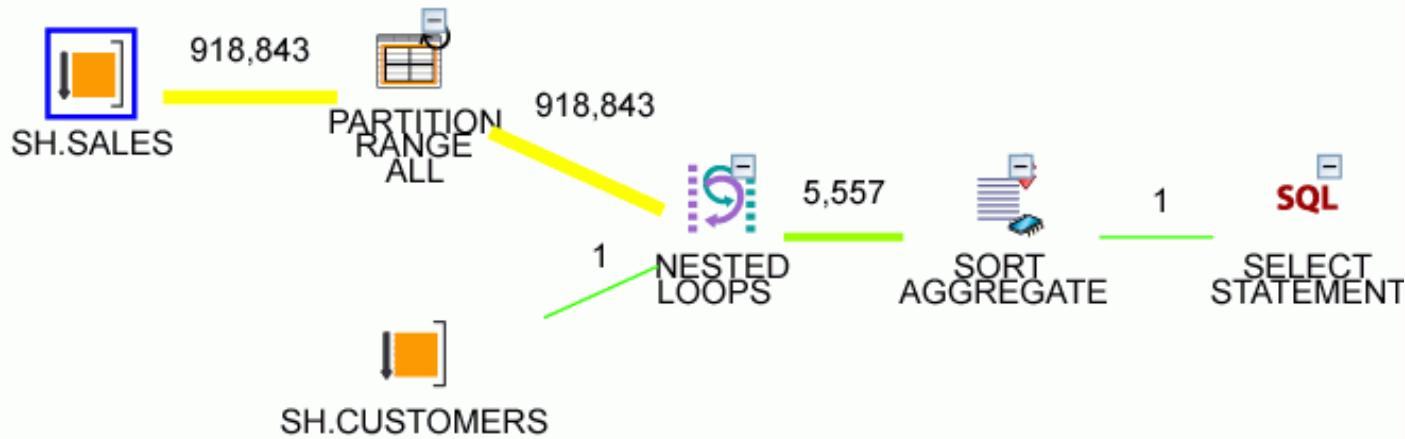
Historical Pain Point of Database Upgrades

Will there be a Performance Regression?



Historical Pain Point of Database Upgrades

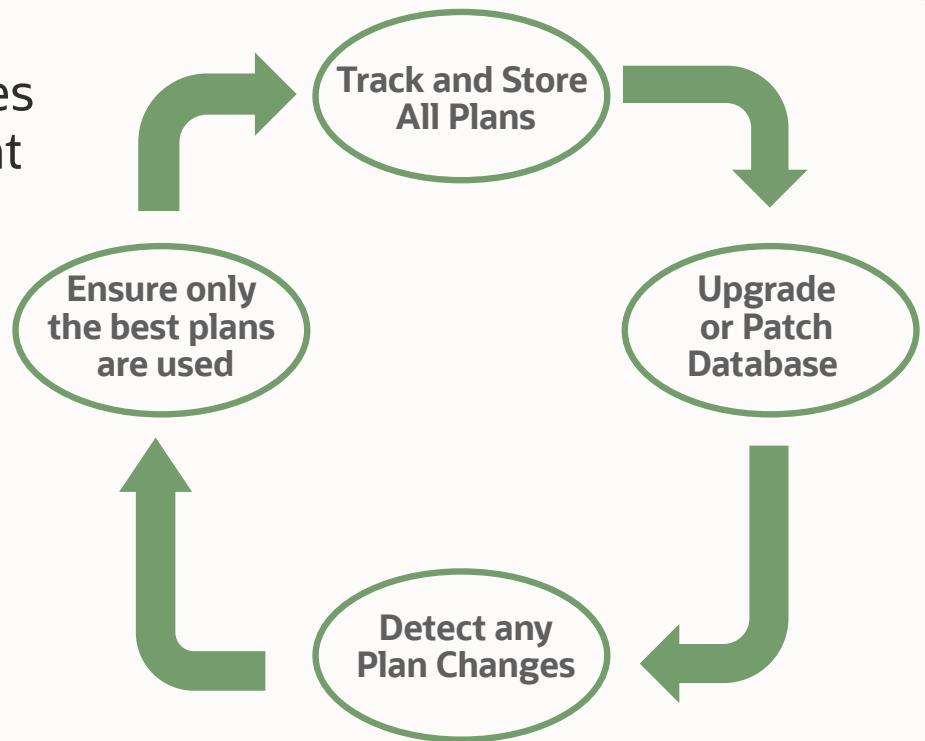
Leading Cause of Performance Regressions?



Execution Plan Changes

Autonomous Plan Stability Management for Upgrades

- Autonomous Database prevents performance regressions during upgrades and patching with SQL Plan Management
 - Fully automated
 - Always enabled
 - **Zero customer actions required**
- Execution plan and runtime statistics for every known SQL statement stored in Automatic SQL Tuning Set
 - Easily retrieved if plan regression is detected



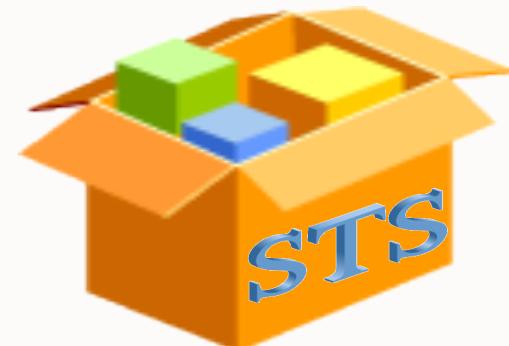
Autonomous Plan Stability Management for Upgrades

**A
perfect
combination of**



Automation – Capture existing Good Plans

- Oracle Autonomous Database uses an Automatic SQL Tuning Set (STS) to capture existing 18c execution plans for all SQL statements
- Task runs periodically to ensure all critical SQL statements are captured
- You can check what statements have been captured by looking in `DBA_SQLSET_STATEMENTS` using the name `sys_auto_sts`



Best Practices – Use SQL Plan Management

- Use ‘stored’ SQL execution plans to prevent Performance Regressions
 - Stored plans are used to prevent unexpected execution plan changes
 - When a new execution plan is found for a SQL statement:
 - A copy of a new plan is kept but not used
 - Use the previous stored plan to ensure consistent performance
 - Offline, test new plan and enable it only after it has been proven to improve performance
- Extremely useful for critical systems
 - Ensures plan stability through upgrades

You should use SQL Plan Management today in all of your on-prem systems



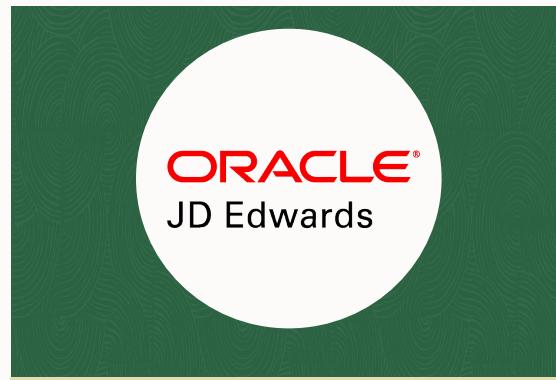
A close-up photograph of a man in a dark suit, white shirt, and dark tie. He is holding his right hand up towards the camera, palm facing forward, in a gesture that suggests he is about to say 'stop' or 'no'. The background is blurred.

Yeah but we
still can't use
an
Autonomous
Database

Autonomous Database Support for Oracle Apps



- PeopleSoft Enterprise PT PeopleTools
- Version 8.57 to 8.58
- Certified on Dedicated Infra and Cloud@Customer
- MOS Note 2699934.1



- JD Edwards Applications Release 9.2 and above
- JD Edwards Tools Release 9.2.4.3 and above
- Certified on Dedicated Infra and Cloud@Customer
- MOS Note 2687249.1

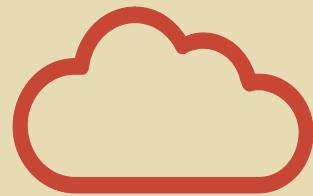


- Siebel System Software - Version 20.10 and later
- Certified on Dedicated Infra and Cloud@Customer
- Expected Oct. 2020



Available Now

Autonomous Database Deployment Options



Exadata
Infrastructure
in the Cloud



Gen 2 Exadata
Cloud@Customer



Dedicated Region
Cloud@Customer

Some Customers Cannot Move to Public Cloud

Regulations

- Regulations or policies require data to be local

Latency

- Applications require performance of local LAN

Integration

- Databases tightly-coupled with on-premises applications

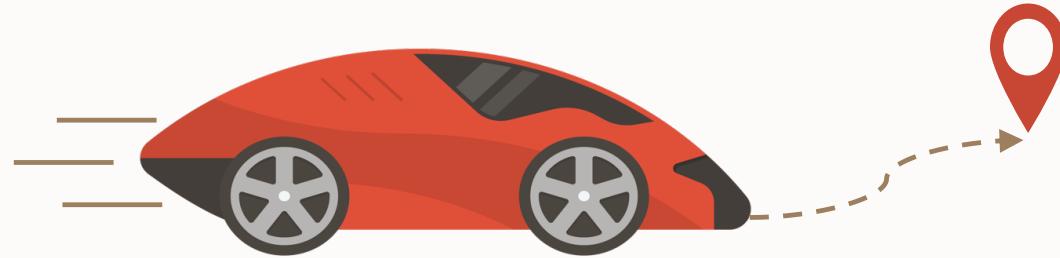
Risk

- Concerns about multiple tenants sharing the cloud



Exadata Cloud@Customer Addresses These Concerns

Autonomous Database on Exadata Cloud@Customer



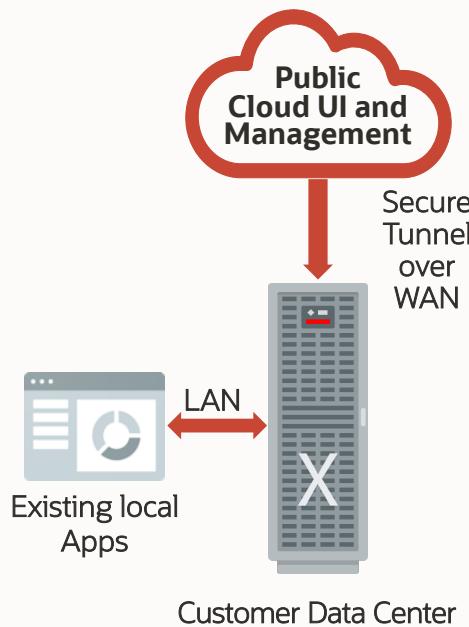
Same features and benefits of Autonomous Database in Public Cloud

Now running on Gen 2 ExaC@C in your data center

Autonomous Database – Exadata Cloud@Customer

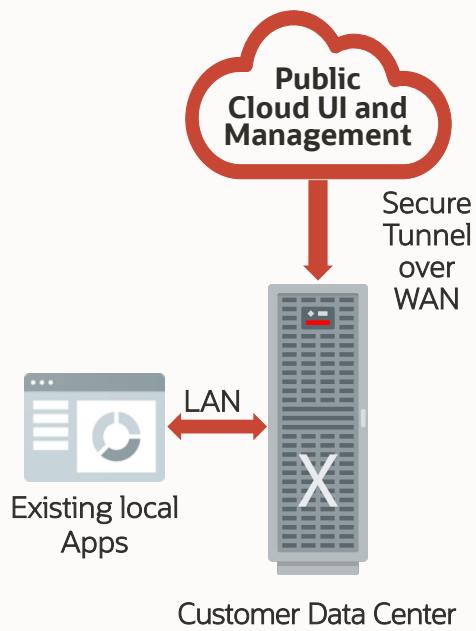
Primary Goals/Benefits

- Autonomous DB on Gen 2 Exadata Cloud@Customer
 - Looks exactly like Autonomous DB running in Public Cloud
 - Same simplicity, agility, performance, and elasticity



Autonomous Database – Exadata Cloud@Customer

Primary Goals/Benefits



- Autonomous DB on Gen 2 Exadata Cloud@Customer
 - Looks exactly like Autonomous DB running in Public Cloud
 - Same simplicity, agility, performance, and elasticity
- **Simplest and fastest transition to Autonomous Cloud**
 - Easily migrate existing on-prem databases
 - Existing Apps in data center simply re-connect and run
 - No application changes needed
 - Data never leaves your data center

Autonomous Database on Dedicated Regions Cloud@Customer

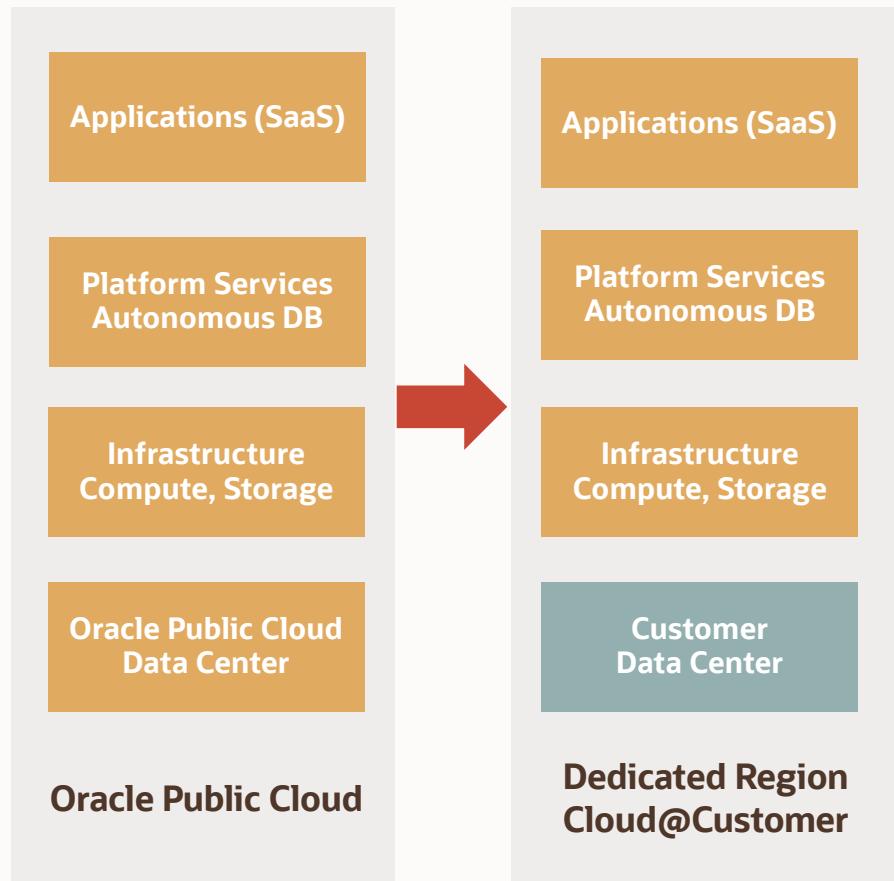


Same features and benefits of Autonomous Database in Public Cloud

Now running on your own Dedicated Region

Dedicated Region Cloud@Customer

Copy & Paste Oracle Gen2 Public Cloud into Your Data Center



All Public Cloud Services in Your Data Center

- Fusion Apps, Autonomous DB, Compute, etc.
- Oracle managed maintenance and operations
- Unified management console with public cloud
- SLA guarantees match the public cloud
- **Only pay for what you use**
- **Same price as public cloud**
- Pay with Universal Credits



Oracle Autonomous Database

The **Same** Capabilities Everywhere You Need Them



Questions





ORACLE